Trend Study 1-15-01

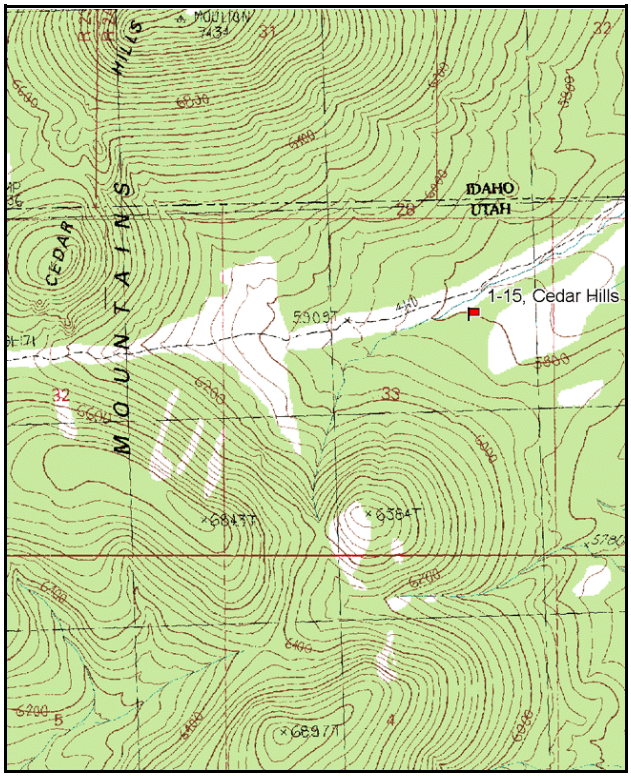
Study site name: Cedar Hills . Vegetation type: Pinyon-Juniper .

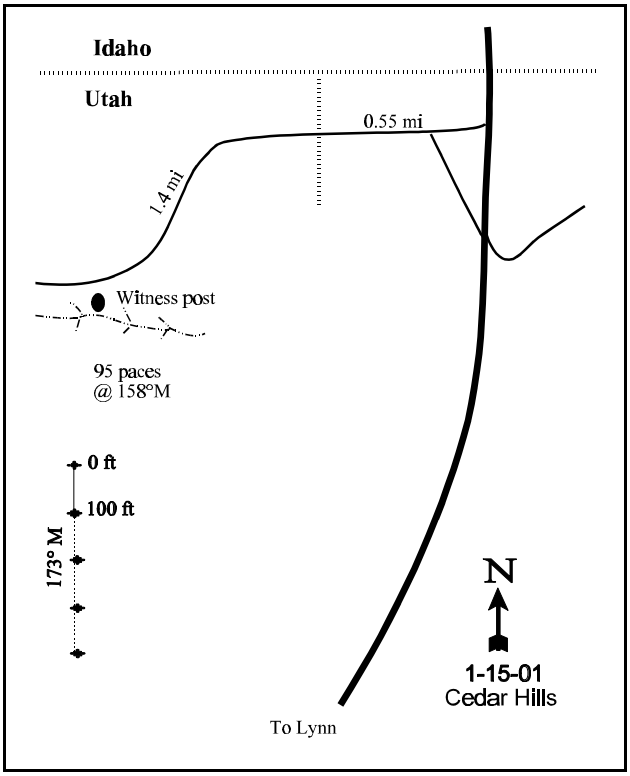
Compass bearing: frequency baseline 173 degrees magnetic.

Frequency belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft). Rebar: belt 1 on 5 ft.

LOCATION DESCRIPTION

From the town of Lynn, drive north to the Utah-Idaho border to a cattleguard. From the cattleguard at the border, follow a faint road along a fence (on south side) for 0.55 miles to a gate. Go through the next seeded pasture 0.65 miles and continue as the road turns away from the fence. Proceed 0.75 miles to a small rock pile and a witness post on the south side of the road. Cross the drainage walking about 95 paces southeast to the 0-foot stake off the baseline in the trees. The 0-foot baseline stake is labeled with browse tag #49.





Map Name: Buck Hollow, Utah-Idaho Diagrammatic Sketch

Township 15N , Range 16W , Section 33 UTM 4651431 N, 277675 E

DISCUSSION

Trend Study No. 1-15

A range trend study was established in the Cedar Hills area in 1990 to provide baseline data for a proposed habitat improvement project that would involve chaining and seeding the pinyon-juniper woodland benches in the area. However, the treatment was not done and a large wildfire burned through the area in 2000, a year before the readings done in 2001. The site is on a deer wintering area near the Utah-Idaho border. The area is managed by the BLM and is allotted for spring and fall cattle use as part of the Junction Creek allotment. The site receives limited use as there are more attractive seeded areas in the unit. There is light deer use due to the limited forage. A pellet group transect read on site in 2001indicated no use by wildlife or livestock.

The study is on a 3-5% north-facing slope with an elevation of 5,800 feet. Originally, the site had a significant component of big sagebrush, but juniper and pinyon trees dominated the site before the fire. The site has a higher potential for successful treatment than the more shallow soils of east-facing juniper and black sagebrush slopes to the south.

The soil is a fine-textured clay loam of moderate depth. The effective rooting depth was determined to be almost 13 inches. The average effective rooting depth for the management unit is almost 17 inches. The soil reaction is slightly alkaline (7.8 pH) with the low amounts of phosphorus in the soil at only 6.7 ppm. This could be a limiting factor for the site as values less than 10 ppm can limit plant growth and development. There was abundant litter cover under the trees until the wildfire went through the area. The combined value for pavement ane rock have changed little since the fire. Bare soil cover values for the site since the burn have gone from only 9% up to 72%. The erosion condition was classified as moderate in 2001 with erosion limited only by the gentle terrain.

The big sagebrush on this site in the past tended to be only lightly hedged, but had reduced vigor due to competition from the pinyon-juniper overstory and extended drought. In 1990, the sagebrush population was mostly decadent and had poor vigor. Sagebrush canopy cover was estimated at 5% in 1990 and down to 1% by 1996. Population density was estimated at 2,232 plants/acre in 1990, declining to 1,160 by 1996. Percent decadency was extremely high in 1990 when 87% of the population was classified as decadent. Fifty-seven percent of the sagebrush displayed poor vigor and 66% of the decadent shrubs were considered dying. By 1996, a small portion of these decadent plants recovered but most died. Dead shrubs, first inventoried in 1996, numbered more than those alive (1,860 plants/acre). Percent decadency was 45% with poor vigor expressed in 22% of the population. Wildlife use of these shrubs was light. Now, there are no shrubs or trees left after the burn. Browse cover is currently zero.

Singleleaf pinyon and Utah juniper originally dominated the site. Point-quarter data, taken in 1996, estimated a density of 318 pinyon/acre, 70% were seedling trees. A density of 407 juniper/acre was also determined, only 15% were seedling and young trees. Average diameter of pinyon was 5 inches while that of juniper was 4 inches. Ten percent of the pinyon and 40% of the juniper trees had diameters of 3 inches or less. Overhead canopy cover of pinyon and juniper was estimated, using line intercept, at 35% which had gone beyond where it suppresses understory species. The wildfire in 2000 eliminated all juniper and pinyon trees.

The healthy but limited perennial grasses and fair diversity of forbs indicated a good site potential prior to the burn. The grasses and forbs combined to produce about 13% cover. A year after the fire grasses and forbs combined produce only about 5% cover. The major species is thickspike. Forbs are currently almost nonexistent.

1990 APPARENT TREND ASSESSMENT

Sagebrush is declining on this range site. There are few young shrubs, poor vigor, and a high percentage of decadent plants. Production of desirable forage is lessened due to factors related to the increasing overstory of pinyon and juniper trees. Without treatment, soil and vegetative trends will continue to decline.

1996 TREND ASSESSMENT

Soil conditions have improved since 1990 due to a decline in percent bare ground. However, litter cover declined from 55% to 41% and erosion is still occurring within the interspaces. Soil trend is considered up slightly. Trend for mountain big sagebrush is in an overall state of decline but shows some improvements since 1990. Density has declined 48% since the last reading due to a reduction in decadent plants. This has improved the decadency ratio and overall vigor, but reproduction is limited. Without some sort of treatment, all of the sagebrush will eventually die out from competition with the overstory of P-J trees and prolonged drought. Trend is considered down. Trend for the herbaceous understory is up due to increased sum of nested frequency of grasses and forbs.

TREND ASSESSMENT
soil - up slightly (4)
browse - down (1)
herbaceous understory - up (5)

2001 TREND ASSESSMENT

Soil conditions have decline severely since 1996 due to a fire that has remover all tree cover, most all herbaceous cover, most all litter cover, and all cryptogamic cover. This condition should improve with time. Soil trend currently is considered down. Trend for mountain big sagebrush is down with all of it lost to the fire. Trend for the herbaceous understory is also down with nested values for both grasses and forbs being severely depressed after the fire. Cryptogamic cover was reduced from 13% to zero. Average litter cover was lowered from 41% down to only 11%.

TREND ASSESSMENT
soil - down after the fire (1)
browse - down, all lost to the fire (1)
herbaceous understory - down (1)

HERBACEOUS TRENDS --
Herd unit 01 , Study no: 15

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'90	'96	'01	'90	'96	'01	'96	'01
G	Agropyron dasystachyum	a76	a60	b135	36	21	53	.76	3.40
G	Agropyron spicatum	a37	b71	a12	15	25	4	.48	.33
G	Poa secunda	b256	b269	a66	90	94	29	4.23	.47
G	Sitanion hystrix	-	2	-	-	1	-	.01	-
Total for Annual Grasses		0	0	0	0	0	0	0	0
Total for Perennial Grasses		369	402	213	141	141	86	5.49	4.21
Total for Grasses		369	402	213	141	141	86	5.49	4.21
F	Agoseris glauca	a-	a2	b5	-	1	3	.00	.04
F	Antennaria rosea	a1	b10	a-	1	6	-	.08	-
F	Arabis spp.	a3	b19	a-	2	8	-	.04	-
F	Astragalus beckwithii	a-	b116	a-	-	54	-	2.27	-
F	Astragalus convallarius	-	3	-	-	1	-	.00	-
F	Astragalus spp.	6	11	7	4	6	4	.08	.02
F	Astragalus utahensis	a3	b21	a6	1	11	2	.13	.01
F	Castilleja chromosa	-	4	-	-	2	-	.01	-
F	Caulanthus crassicaulis	-	-	-	-	-	-	.00	-
F	Chenopodium album (a)	-	-	3	-	-	1	-	.00
F	Chaenactis douglasii	10	13	4	4	5	2	.05	.01
F	Collinsia parviflora (a)	-	a87	b127	-	32	53	.18	.65
F	Crepis acuminata	3	9	6	2	3	4	.10	.02
F	Cryptantha spp.	7	5	-	4	2	-	.04	-
F	Descurainia pinnata (a)	-	-	1	-	-	1	-	.03
F	Erigeron spp.	2	6	-	1	4	-	.04	-
F	Erigeron pumilus	-	1	-	-	1	-	.00	-
F	Haplopappus acaulis	b9	c25	a-	6	12	-	.38	-
F	Hackelia patens	-	-	1	-	-	1	-	.00
F	Penstemon spp.	ab2	b14	a-	2	6	-	.43	-
F	Phlox hoodii	b111	c178	a3	52	70	1	3.77	.00
F	Senecio multilobatus	ab14	b29	a3	8	14	1	.07	.00
F	Taraxacum officinale	-	-	1	-	-	1	-	.00
F	Townsendia spp.	-	4	-	-	2	-	.01	-
F	Unknown forb-perennial	-	-	5	-	-	3	-	.01
F	Zigadenus paniculatus	a-	a-	b20	-	-	9	.01	.37

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'90	'96	'01	'90	'96	'01	'96	'01
Total for Annual Forbs		0	87	131	0	32	55	0.18	0.68
Total for Perennial Forbs		171	470	61	87	208	31	7.55	0.50
Total for Forbs		171	557	192	87	240	86	7.73	1.19

Values with different subscript letters are significantly different at alpha = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 01 , Study no: 15

Type	Species	Strip Frequency		Average Cover %	
		'96	'01	'96	'01
B	Artemisia tridentata vaseyana	35	0	1.05	-
B	Chrysothamnus nauseosus consimilis	1	0	.03	-
B	Chrysothamnus viscidiflorus stenophyllus	7	0	.04	-
B	Juniperus osteosperma	34	0	9.75	-
B	Opuntia spp.	1	0	-	-
B	Pinus monophylla	9	0	1.65	-
B	Symphoricarpos oreophilus	7	0	.30	.00
Total for Browse		94	0	12.84	0.00

CANOPY COVER --
Herd unit 01 , Study no: 15

Point-Quarter Tree Data

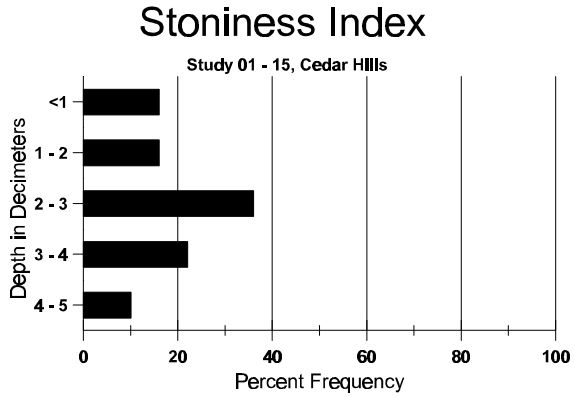
Species	Percent Cover		Trees per Acre		Average diameter (in)	
	'96	'01	'96	'01	'96	'01
Juniperus osteosperma	7	0	459	0	3.8	-
Pinus monophylla	29	0	80	0	5.1	-

BASIC COVER --
Herd unit 01 , Study no: 15

Cover Type	Nested Frequency		Average Cover %		
	'96	'01	'90	'96	'01
Vegetation	331	220	4.00	26.79	6.07
Rock	82	21	1.50	.71	.24
Pavement	242	359	11.25	9.01	13.58
Litter	388	246	54.75	40.83	11.15
Cryptogams	249	-	7.75	12.89	0
Bare Ground	201	382	20.75	9.32	72.24

SOIL ANALYSIS DATA --
Herd Unit 01, Study no: 15, Cedar Hills

Effective rooting depth (in)	Temp °F (depth)	PH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
12.7	57.4 (13.0)	7.8	30.7	40	29.3	3.0	6.7	390.4	.6



PELLET GROUP FREQUENCY --
Herd unit 01 , Study no: 15

Type	Quadrat Frequency	
	'96	'01
Rabbit	14	-
Deer	4	-

Pellet Transect	
Pellet Groups per Acre ⁄01	Days Use per Acre (ha) ⁄01
-	-
-	-

BROWSE CHARACTERISTICS --
Herd unit 01 , Study no: 15

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata vaseyana																		
Y	90	-	-	-	1	-	-	-	-	-	1	-	-	-	33			1
	96	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	90	7	-	-	1	-	-	-	-	-	7	1	-	-	266	20	18	8
	96	20	2	-	5	-	-	-	-	-	26	-	-	1	540	15	18	27
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
D	90	56	1	-	1	-	-	-	-	-	20	-	-	38	1933			58
	96	22	2	-	2	-	-	-	-	-	14	-	-	12	520			26
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
X	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	1860			93
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'90	01%	00%	57%	-48%
'96	07%	00%	22%	
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'90	2232	Dec:	87%
	'96	1160		45%
	'01	0		0%

Chrysothamnus nauseosus consimilis																		
Y	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'90	00%	00%	00%	
'96	00%	00%	00%	
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'90	0	Dec:	-
	'96	20		-
	'01	0		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus viscidiflorus stenophyllus																		
Y	90	6	-	-	-	-	-	-	-	-	6	-	-	-	200			6
	96	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	90	1	-	-	-	-	-	-	-	-	1	-	-	-	33	7	8	1
	96	8	-	-	-	-	-	-	-	-	8	-	-	-	160	7	7	8
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
D	90	9	-	-	4	-	-	-	-	-	7	-	-	6	433			13
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'90	00%	00%	30%	-70%
'96	00%	00%	00%	
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'90	666	Dec:		65%
'96	200			0%
'01	0			0%

Juniperus osteosperma																		
Y	90	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	96	8	-	-	-	-	-	-	-	-	8	-	-	-	160			8
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	90	13	-	-	-	-	-	-	-	-	12	-	1	-	433	108	61	13
	96	25	-	-	-	-	-	1	10	-	36	-	-	-	720	-	-	36
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
D	90	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	96	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
X	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'90	00%	00%	07%	+45%
'96	00%	00%	02%	
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'90	499	Dec:		7%
'96	900			2%
'01	0			0%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Opuntia spp.																		
M	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20	5	9	1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'90	00%	00%	00%	
'96	00%	00%	00%	
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'90	0	Dec:	-
	'96	20		-
	'01	0		-

Pinus monophylla																		
S	90	3	-	-	2	-	-	-	-	-	4	-	1	-	166			5
	96	8	-	-	1	-	-	-	-	-	9	-	-	-	180			9
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	90	2	-	-	-	-	-	-	-	-	2	-	-	-	66	157	97	2
	96	3	-	-	-	-	-	-	1	-	4	-	-	-	80	-	-	4
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'90	00%	00%	00%	+63%
'96	00%	00%	00%	
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'90	66	Dec:	-
	'96	180		-
	'01	0		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Symphoricarpos oreophilus																		
S	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	5	-	-	1	-	-	-	-	-	6	-	-	-	120			6
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	90	1	-	-	-	-	-	-	-	-	1	-	-	-	33	6	9	1
	96	2	-	-	-	-	-	-	-	-	2	-	-	-	40	11	17	2
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'90	00%	00%	00%	+79%
'96	00%	00%	00%	
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'90	33	Dec:	-
	'96	160		-
	'01	0		-